

Application No. 10/563,911  
Amendment dated December 31, 2007  
Reply to Office Action of June 29, 2006

Docket No.: 1503-0187PUS1

**AMENDMENTS TO THE DRAWINGS**

Attached hereto is one (1) sheet of corrected drawings that comply with the provisions of 37 C.F.R. § 1.84. The corrected drawings incorporate the following drawing changes:

Fig. 3 has been revised to remove the solid black shading.

It is respectfully requested that the corrected drawings be approved and made a part of the record of the above-identified application.

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REMARKS

Claims 1-6 and 8-10 are now present in this application.

The specification and claims 1-6 have been amended, claim 7 has been cancelled without prejudice or disclaimer, and claims 8-10 have been presented. Reconsideration of the application, as amended, is respectfully requested.

Objection to the Drawings

The drawings stand objected to for an informality. Accordingly, attached hereto is a replacement drawing sheet in which the solid black shading has been removed from Fig. 3. Reconsideration and withdrawal of any objection to the drawings are respectfully requested.

Rejection under 35 USC 103

Claims 1-7 stand rejected under 35 USC 103 as being unpatentable over Lys et al., U.S. Patent 6,459,919, in view of Hanley, U.S. Patent 6,733,150. This rejection is respectfully traversed.

Independent claim 1 of the present application recites (emphasis added):

1. A light-emitting diode (LED) illuminator with semiconductor light sources for a headgear with a visor, said illuminator comprising:

light emitting semiconductor light sources, a frame, an electronics control part for controlling the semiconductor light sources, and fastening parts for fastening the illuminator, the semiconductor light sources being directed in at least one given direction, such as towards at least one of a working object and area, wherein:

*the illuminator is a unitary illuminator module;*

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the semiconductor light sources are fitted in a common connection part, side by side and directed towards at least one of the working object and area; and

*the frame has two frame parts folded against each other so that at least a part of the visor remains between the frame parts, and the frame parts being attached to each other and the visor by means of releasable quick coupling parts.*

Independent claim 1 specifically sets forth that the illuminator contains (1) light emitting semiconductor light sources, (2) a frame, (3) an electronics control part for controlling the semiconductor light sources, and (4) fastening parts for fastening the illuminator. Claim 1 further recites that the illuminator is a unitary illumination module, i.e., each of elements (1) - (4) listed above is part of a single unit. Lys, it is noted that this patent fails to teach or suggest the illuminator being a unitary illumination module. In particular, the electronics control part of Lys et al. is not unitarily formed with the frame and light source. The Examiner has referred to column 6, lines 66-67 of Lys et al. as disclosing the electronics control part. This portion of the specification refers to "digitally controlled LED based lights." Column 5, lines 46-47 of Lys et al. establish that the LED system is "computer-controlled." Column 11, line 65 through column 12, line 29 further set forth that the light module can receive data through a data connection from an electronics control part, such as a laptop computer. Accordingly, the electronics control part of Lys et al. is not unitarily formed with the semiconductor light sources, frame and fastening parts, as is found in the present application.

It is further noted that Lys et al. does not teach or suggest the frame of the present application. The Examiner does admit that Lys et al. fails to teach or suggest the frame having two frame parts folded against each other so that at least a part of the visor remains between the frame parts, and the frame parts being attached to each other and the visor by means of releasable

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quick coupling parts, as are required in independent claim 1 of the present application. The Examiner further admits that Lys fails to teach or suggest a common connection part with the light sources being side by side. Instead, the Examiner relies instead on Hanley to teach these features.

Hanley teaches an illumination device for headgear, in which the light source 330 and the electrical conducting path 380 are *mechanically and integrally disposed* at the rim 310 of the brim 308 by means of *being molded into the material* which comprises the main panel 312 of the brim 308. (see column 5, lines 13-17). Hanley alternatively teaches that the light source can be mounted within a void (such as a cut-out or groove) and secured with stitching or adhesive (column 5, lines 17-20). The incorporation of the light source into the brim 408 is illustrated in Fig. 4. It is respectfully submitted that this is unlike the present application, in which two frame parts are folded against each other so that at least a part of the visor remains between the frame parts, and the frame parts being attached to each other and the visor by means of releasable quick coupling parts. In other words, the light source of Hanley sits inside the brim, whereas the light source of the present application is mounted on the outside of the brim.

Hanley does teach a variation in which the light source is mounted under the brim 808 (column 7, lines 50-51). However, this still differs from the frame parts being folded against each other so that at least a part of the visor remains between the frame parts.

Hanley further fails to teach or suggest the illuminator being a unitary illumination module. As set forth above, independent claim 1 specifically sets forth that the illuminator contains (1) light emitting semiconductor light sources, (2) a frame, (3) an electronics control part for controlling the semiconductor light sources, and (4) fastening parts for fastening the

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illuminator. Claim 1 further recites that the illuminator is a unitary illumination module, i.e., each of elements (1) - (4) listed above is part of a single unit. The electronics control part of Hanley is, however, not unitarily formed with the frame and light source. As is set forth in column 6, lines 42-54, the power supply 150 of Hanley is coupled on the interior of the crown of the cap, such that electronics control part (switch 166) is positioned away from the user's head so that the user can reach and manipulate the switch through the flexible material comprising the crown 102 of the cap. Accordingly, the electronics control part of Hanley is not unitarily formed with the frame, light source, and fastening parts.

In view of the foregoing amendments and remarks, it is respectfully submitted that the prior art utilized by the Examiner, either alone or in combination, fails to teach or suggest the LED illuminator of independent claim 1 and its dependent claims. Reconsideration and withdrawal of the 35 USC 103 rejection are respectfully requested.

#### Conclusion

Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

  
By Paul E. Lewis

Registration No.: 43,368

BIRCH, STEWART, KOLASCH &amp; BIRCH, LLP

8110 Gatehouse Road

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant

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## LED LIGHT FOR HEADGEAR

### BACKGROUND OF THE INVENTION

#### Field of the Invention

5 The present invention relates to LED illuminator designed to be attached to a headgear or equivalent and comprising one or more light emitting semiconductor light sources, especially LEDs (Light Emitting Diode), a frame, an electronics control part for controlling the semiconductor light sources, and a fixing part for fixing the illuminator.

#### Brief Discussion of the Related Art

10 For example in orienteering, when orienteering is done in darkness, forehead-lamps consisting of an incandescent illuminator and a power source attached to a forehead band are used. The forehead-lamp has a good illuminating efficiency, and its placement on the forehead band allows the person to move freely in the terrain and read the map without the person having to carry any hand-held illuminator in  
15 his/her hands.

The biggest drawback of present forehead-lamps is the large size of the incandescent illuminators and the high power consumption of the incandescent lamp. This also requires a large power source. In addition, due to the large size of the incandescent illuminators, present forehead-lamps are relatively ugly in appearance.  
20

For example, specification US-B2-6,659,618 discloses an illuminator attached to a cap and using a light source consisting of a number of separate LEDs placed side by side. The LED has a very low power consumption and also a very small size, so it can be used to form illuminators of a relatively small size.

25 A drawback with the solution disclosed in the aforesaid US specification is that it is difficult to fit the illuminator inside the visor of the cap, and, as it consists of several separate LED units, it also requires a relatively large space.

### SUMMARY OF THE INVENTION

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The object of the present invention is to overcome the drawbacks of prior art and to create a compact LED illuminator module for a headgear or equivalent that can be easily fixed and allows the illuminator to be very effectively precision-aimed at a desired target.

5        ~~The details of the features of the solution of the invention are presented in the attached claims.~~

By using the invention, it is possible to produce precision-directed LED illuminator modules integrated with a headgear, which are applicable for personal use e.g. in caps, surgeon's headgear, helmets, such as protective helmets, and in diving  
10       masks.

It is also possible to use different and differently colored light modules, which work together or separately. They may be fixed or movable. They are precision positioned ~~and~~ precision directed in a given direction. The aim is to illuminate the target and to make both hands free for only the intended action, such as e.g. a LED  
15       illuminator attached to a cap according to the personal "Led It See" illuminator system as illustrated in Fig. 1. It can also be attached to a helmet or diving mask etc.

Further scope of the applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred  
20       embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

**BRIEF DESCRIPTION OF THE DRAWINGS**

In the following, ~~the~~ The present invention will be described in detail with reference to an example and the attached become more fully understood from the  
25       following detailed description and the accompanying drawing, which is given by way of illustration only, and thus is not limitative of the present invention, wherein:

Fig. 1 presents a LED illuminator attached to a cap or equivalent, and



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~~Fig. Figs.~~ 2 and 3 present another LED illuminator according to the invention in an opened position as seen from above and from below.

Fig. 1 presents a LED illuminator module according to the invention, designed to be attached to a headgear and comprising a frame 1, 2, a rectangular LED unit 3, which for example in Fig. 1 consists of six LEDs 4 placed side by side, and an electronics part 5, which is provided with a switch 6 for switching the illuminator on/off. A battery or the like for the supply of electric power to the illuminator can be mounted separately and is not shown in Fig. 1.

The frame 1, 2 consists of two curved visor-shaped frame parts 1, 2 placed one over the other, which can be folded against each other so that the visor remains between them, and they can be fastened to the visor and to each other by means of push-on snap-on fasteners 7, so the illuminator can be easily attached to the visor and detached from it when necessary. The visor can then be additionally coated e.g. with fabric. The electronics part 5 is connected to the back part of the frame part 1, 2, so it will not be a hindrance to the aiming of the LEDs.

In a corresponding manner, it is possible to implement a LED illuminator (~~figures Figs.~~ 2 - 3) designed to be attached to the visor of a helmet and comprising a LED unit 13 with LEDs and rectangular frame parts 11, 12, which can be folded together in a corresponding manner and fastened by means of snap-on fasteners. The frame part can be provided with an opening 18 for the electronics part and with holes 19 for the fasteners.

The LED control electronics consist of a resistor controlling each LED, a switch and a direct-current source. The luminous efficiency of the illuminator can be varied by varying the number and luminous efficiency of the parallel LEDs.

It is obvious to the person skilled in the art that different embodiments of the invention are not limited to the example described above, but that they may be varied within the scope of the claims presented below. It may also be a water-tight (IP class 55 and upwards) encapsulated LED unit designed to be attached to protective helmets (motor vehicle drivers' helmets, miners' helmets, professional divers'

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helmets). The module can also be provided with UV LEDs for use by authorities (for determining the authenticity of personal documents etc. on a road, in situ). Likewise, IR LEDs can be used for special functions. The structure of the precision-directed LED unit is the same in all applications. Vertical as well as azimuth alignment is done manually.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.